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Salmonella

Questions and Answers

Salmonella is the most frequently reported cause of foodborne illness. In 1996, the Centers for Disease Control and Prevention (CDC) documented 39,027 cases. Much is being learned about *Salmonella* and the risks associated with it through FoodNet, the Foodborne Diseases Active Surveillance Network. Begun in 1995, FoodNet is a collaborative project of the U.S. Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS), CDC, the Food and Drug Administration (FDA), and seven participating states. FoodNet tracks cases of foodborne illness to better gauge the prevalence of food-related illness in this country and to monitor the effectiveness of food safety programs in reducing foodborne illness.

It is important to remember that many food products may contain bacteria. A comprehensive farm-to-table approach to food safety is necessary. Farmers, industry, food inspectors, retailers, food service workers, and consumers are each critical links in the food safety chain. This Backgrounder answers common questions about *Salmonella*, describes how USDA is addressing the problems of *Salmonella* contamination, and offers guidelines for safe food handling to prevent bacteria, such as *Salmonella*, from causing illness.

What is *Salmonella*?

The *Salmonella* family includes over 2,300 serotypes of bacteria which are one-celled organisms too small to be seen without a microscope. Two types, *Salmonella* Enteritidis and *Salmonella* Typhimurium account for approximately half of all human infections. Strains that cause no symptoms in animals can make people sick, and vice versa. If present in food, it does not affect the taste, smell, or appearance of the food. The bacteria live in the intestinal tracts of infected animals and humans.

Salmonella bacteria have been known to cause illness for over 100 years. They were discovered by an American scientist, Dr. Daniel E. Salmon.

What is salmonellosis?

Salmonellosis, or a *Salmonella* infection, is the illness that can occur if live *Salmonella* bacteria enter the body, usually through eating foods containing the bacteria. Salmonellosis is one of the most common bacterial foodborne illnesses, but many cases could be prevented by proper food handling practices.

How do *Salmonella* bacteria on food make people sick?

Bacteria can grow on just about any food, such as meat, poultry, seafood, eggs, and dairy products in particular, as well as vegetables and fruits, such as beans, grains, orange juice, cantaloupe, and sprouts. To survive and multiply, bacteria need time and the right conditions: food, moisture, and warm temperatures. The ideal temperature for bacterial growth is between 40° and 140 °F. *Salmonella* present on raw chicken could survive if the chicken is not cooked thoroughly. *Salmonella* can also cause foodborne illness through cross-contamination; for example, juices from raw meat or poultry prepared on a cutting board could contaminate salad ingredients if the board was not washed before cutting up the salad. If this salad sat at room temperature for any length of time, the *Salmonella* would multiply to dangerous numbers. The person who eats the salad then also eats the bacteria and becomes ill.

What are the symptoms of salmonellosis?

According to CDC, most people experience diarrhea, abdominal cramps, and fever within 8 to 72 hours after the contaminated food was eaten. Additional symptoms may be chills, headache, nausea, and vomiting. Symptoms may last up to 7 days. Many people ill with salmonellosis recover without treatment and may never see a doctor. However, *Salmonella* infections can be life-threatening especially for the very young, the elderly, and for persons with impaired immune systems.

Are there long-term consequences?

Persons with diarrhea usually recover completely, although it may be several months before their bowel habits are entirely normal. A small number of persons who are infected with *Salmonella* will develop pains in their joints, irritation of the eyes, and painful urination. This is called Reiter's syndrome. It can last for months or years and can lead to chronic arthritis that is difficult to treat.

How many people get sick from salmonellosis?

Not all cases of foodborne illness are reported, but experts believe that anywhere from 696,000 to 3.8 million people contract salmonellosis each year. The only way to confirm salmonellosis is to conduct laboratory tests on the stools of the ill person, a process that takes several days. To overcome the difficulties caused by unreported cases, the collaborating FoodNet sites have set up a system to actively identify laboratory-confirmed cases of foodborne illnesses. This system will provide more specific numbers in the future.

What foods are most likely to make people sick?

Any raw food of animal origin, such as meat, poultry, milk and dairy products, eggs, seafood, and some fruits and vegetables may carry *Salmonella* bacteria. The bacteria can survive to cause illness if these foods are not thoroughly cooked. The bacteria can also cause illness if they contaminate any other food that comes in contact with the raw food. Safe food handling practices are necessary to prevent bacteria on raw food from causing illness.

Are Kosher or “free-range” chickens lower in *Salmonella* bacteria?

FSIS does not know of any valid scientific information that shows that any specific type of chicken has more or less *Salmonella* bacteria than other poultry.

What is USDA doing to prevent *Salmonella* contamination?

Under USDA’s new science-based inspection system, FSIS will test meat and poultry samples to identify pathogens, including *Salmonella*. For the first time ever, FSIS is requiring all plants to reduce bacteria by means of a Hazard Analysis and Critical Control Points (HACCP) plan and accompanying testing and performance standards. These national performance standards will be adjusted downward over time, even further reducing bacteria levels.

How can salmonellosis be prevented?

Bacteria on raw foods of animal origin do not have to cause illness. The key to preventing illness, at home, in a restaurant, at a church picnic, or anywhere, is to prevent the bacteria from growing to high levels and to destroy the bacteria through thorough cooking. Follow these guidelines for safe food preparation:

CLEAN: Wash Hands and Surfaces Often

- Wash your hands with hot soapy water before handling food and after using the bathroom, changing diapers, and handling pets.
- Wash your cutting boards, dishes, utensils, and counter tops with hot soapy water after preparing each food item and before you go on to the next food.
- Use plastic or other non-porous cutting boards. These boards should be run through the dishwasher -- or washed in hot soapy water -- after use.
- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels, wash them often in the hot cycle of your washing machine.

SEPARATE: Don’t Cross-contaminate

- Separate raw meat, poultry, and seafood from other foods in your grocery shopping cart and in your refrigerator.
- If possible, use a different cutting board for raw meat products.
- Always wash hands, cutting boards, dishes, and utensils with hot soapy water after they come in contact with raw meat, poultry, and seafood.
- Never place cooked food on a plate which previously held raw meat, poultry, and seafood.

COOK: Cook to Proper Temperatures

- Use a clean thermometer, which measures the internal temperature of cooked foods, to make sure meat, poultry, casseroles, and other foods are cooked all the way through.
- Cook roasts and steaks to at least 145 °F. Poultry parts should be cooked to 170 °F and whole poultry to 180 °F for doneness.
- Cook ground beef, where bacteria can spread during processing, to at least 160 °F.
- Cook eggs until the yolk and white are firm. Don't use recipes in which eggs remain raw or only partially cooked.
- Fish should be opaque and flake easily with a fork.
- When cooking in a microwave oven, make sure there are no cold spots in food where bacteria can survive. For best results, cover food, stir, and rotate for even cooking. If there is no turntable, rotate the dish by hand once or twice during cooking.
- Bring sauces, soups, and gravy to a boil when reheating. Heat other leftovers thoroughly to at least 165 °F.

CHILL: Refrigerate Promptly

- Refrigerate or freeze perishables, prepared foods, and leftovers within 2 hours or sooner.
- Never defrost food at room temperature. Thaw food in the refrigerator, under cold running water, or in the microwave. Marinate foods in the refrigerator.
- Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator.
- Don't pack the refrigerator. Cool air must circulate to keep food safe.

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FSIS Web site:	www.usda.gov/fsis	
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